APPENDIX A – Acronyms

A. ACRONYMS USED IN THIS DOCUMENT

Acronym	Definition
ADA	Americans with Disabilities Act
AGT	Automatic Guideway Transit
ART	Arlington Transit
BRT	Bus Rapid Transit
CCPY	Crystal City-Potomac Yard, the study area for this project
CLRP	Financially Constrained Long-Range Plan
CMAQ	Congestion Mitigation and Air Quality Funding
COG	Metropolitan Washington Council of Governments
COP	Certificates of Participation
DASH	Alexandria Transit Company
DEIS	Draft Environmental Impact Statement
DRPT	(Virginia) Department of Rail and Public Transportation
EIS	Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
GARVEES	Grant Anticipation Revenue Vehicles
GWMP	George Washington Memorial Parkway
HOV	High-Occupancy Vehicle
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
LPA	Locally-Preferred Alternative
LRT	Light Rail Transit
MEF	Pentagon Metrorail Entrance Facility
Metro	Washington Metropolitan Area Transit Authority
MPO	Metropolitan Planning Organization
MWCOG	Metropolitan Washington Council of Governments
NEPA	National Environmental Policy Act of 1969
NWI	National Wetlands Inventory
PAC	Policy Advisory Committee
PMP	Project Management Plans
PPTA	Public Private Transportation Act
RF&P	Richmond, Fredericksburg, and Potomac Railroad
ROD	Record of Decision
SCOOT	Split Cycle Offset Optimization Technique
STP	Surface Transportation Program
TAC	Technical Advisory Committee
TAZ	Traffic Analysis Zone
TEA-21	Transportation Equity Act for the 21st Century

Acronym	Definition
TIFIA	Transportation Infrastructure Finance and Innovation Act
TSM	Transportation System Management
UTP	Urban Transportation Planning
VDOT	Virginia Department of Transportation
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
VRE	Virginia Railway Express
WMATA	Washington Metropolitan Area Transit Authority

APPENDIX B – Baseline Conditions

B. BASELINE CONDITIONS

An important element in evaluating alternatives in an Alternatives Analysis is the establishment of a baseline. The baseline represents the condition against which each of the alternatives will be compared. In environmental impact statements (EIS), a type of study more common to most people involved in transportation projects, the baseline condition is the "no-build" condition. In a typical EIS, each alternative is compared against the no-build condition and the alternative best meeting the goals of the study, either no-build or one of the build alternatives, is recommended for implementation. For an alternatives analysis, the baseline is slightly different.

The Federal Transit Administration created the guidelines for the New Starts Criteria evaluations used in transit alternatives analyses. In this Alternatives Analysis, the baseline serves as a way of comparing the benefits of new transit (Metrorail stations, BRT line, or LRT line) in the Crystal City/Potomac Yard Corridor against low-cost alternatives that could readily be implemented without major federal funding. This comparison condition represents a "best you can do" alternative in the absence of a major investment in the transportation infrastructure beyond any improvements already proposed and for which funding has been identified.

The baseline condition is not the existing condition. The region's financially Constrained Long-Range Plan (CLRP) identifies 105 transportation projects for which funding is expected to be available between now and 2025. One possible baseline, therefore is the existing conditions plus the addition of the 105 transportation projects identified in the CLRP.

Focusing more closely on the Crystal City/Potomac Yard Corridor, certain improvements could be made to improve general vehicular circulation and transit operations. The state and local jurisdictions have spent considerable time studying transportation deficiencies and potential remedies for the study corridor. Consequently, most of those projects already included in the state and local plans for this corridor have been included as part of an alternative baseline condition.

Beyond those projects, it is recommended that a traffic signal priority system for transit buses in the Route 1 corridor and additional bus service within that corridor be included as part of the alternative baseline.

FTA guidelines call for project proponents to submit two baselines for consideration. The first is typically the region's constrained long-range plan. The second would be any additional low-cost projects that might be implemented in place of the new transit alternatives under consideration.

FTA would then review the two baselines in light of the proposed project and select from the two to identify which should be used as a comparison in the alternatives analysis. The alternative baselines are described below.

Table B-1
Summary of Baseline Conditions

Baseline Condition	Alternate Baseline Condition (Baseline Lite)
• Existing conditions • 80 highway and 25 transit improvements contained with the regional Constrained Long-Range Plan*	• Existing conditions • 80 highway and 25 transit improvements contained with the regional Constrained Long-Range Plan* • 35 transportation improvements identified in local, state, and regional plans • Traffic signal priority system in the Route 1 corridor • Additional bus service within the corridor between Braddock Road and Pentagon Metrorail stations.

*The Potomac Yard Metrorail Station, which is part of the CLRP, was not included in the baseline as it is one of the alternatives being evaluated in the study.

For purposes of this study, an alternate baseline, referred to in this study as "Baseline Lite," was selected as the comparison condition. Both baselines proposed for consideration by the FTA are shown in Table B-1 above.

A technical memorandum was submitted to the FTA for consideration and advice on the most appropriate baseline condition to use for the New Starts Criteria evaluation. While FTA has advised that a final determination on baseline would not be made until the alternatives have been more fully developed, early review indicated that the alternate baseline "Baseline Lite" was preferred and sufficient.

B.1 CONSTRAINED LONG-RANGE PLAN IMPROVEMENTS

The Metropolitan Washington region encompasses all that is shown in Figure B-1: the District of Columbia and the jurisdictions surrounding it including Alexandria and Arlington. Planning for transportation improvements is conducted on a regional basis with the land use plan cooperatively established by the member jurisdictions. Highway, transit, and non-motorized transportation improvements are then developed and evaluated for inclusion in the plan.

The Constrained Long-Range Plan (CLRP), and the process used to formulate that plan, respond to federal requirements that funding sources be identified for all strategies and projects included in long-range plans. Updated at least every three years, the CLRP includes only those projects and strategies that can be implemented over the planning period with funds that are "reasonably expected to be available."

Table B-2 lists the highway projects included on the CLRP (Figure B-1 illustrates these projects). Table B-3 lists the Transit and HOV projects (Figure B-2 illustrates these projects).

Figure B-1
Constrained Long-Range Plan Major Highway Improvements

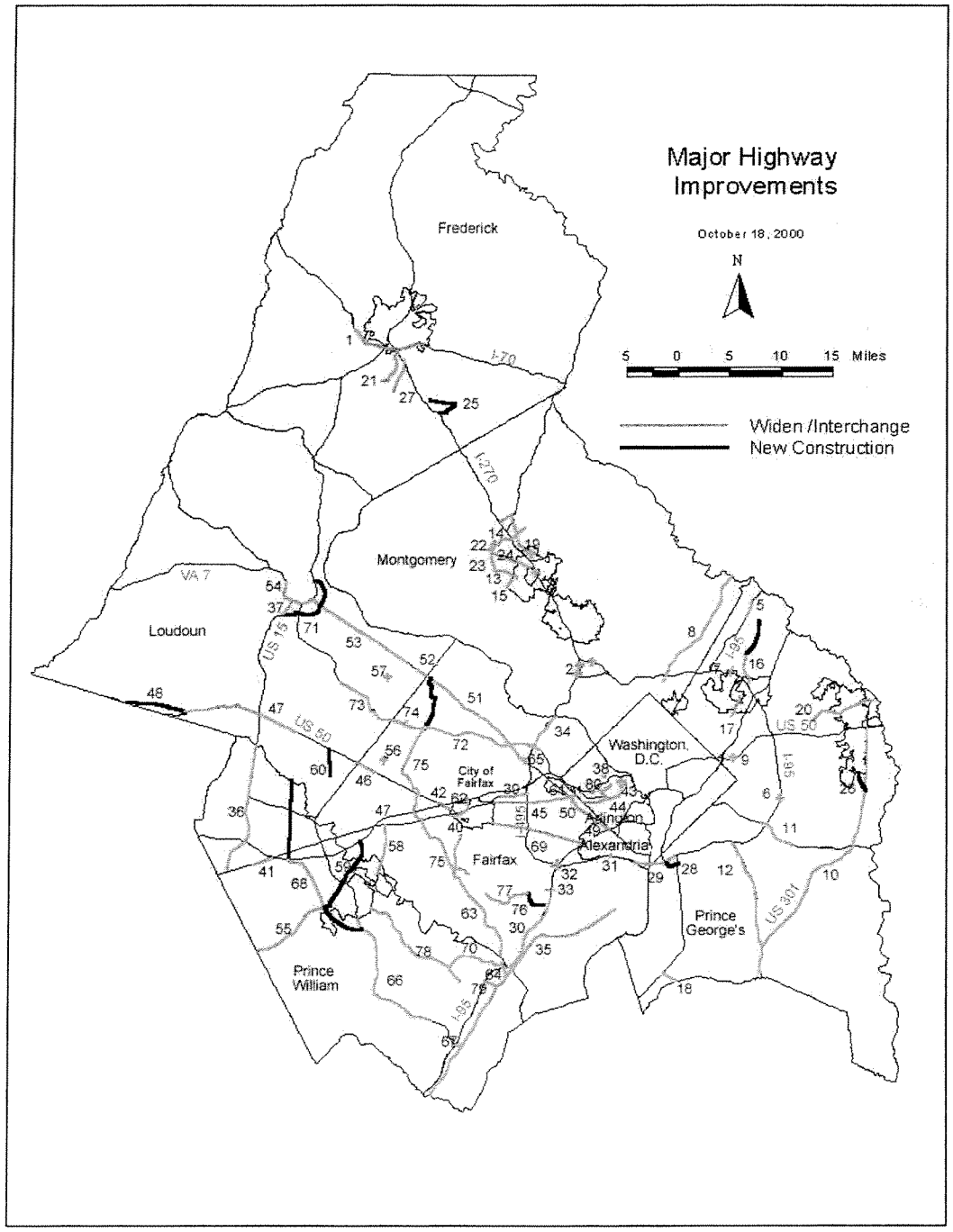


Table B-2
Highway Projects on the Constrained Long-Range Plan

Maryland Projects	Anticipated Construction Date
1. I-70, construct/widen to 6 lanes, Mt. Phillip Rd. to MD 144FA, 5.3 miles	2010
2. I-270 Spurs, interchange improvements	2000, 2010
3. I-270 interchange at Watkins Mill Rd.,	2025
4. I-270, interchange at MD 117 with Park and Ride lot	2003
5. I-95, interchange and CD lanes at Contee Road, north of MD 212 to north of MD 198, 5.5 miles	2010
6. I-95 interchange at Ritchie Marlboro Road,	2003
7. U.S. 1, widen to 6 lanes from Cherry Hill Rd. to Sunnyside Ave., 0.96 miles	2005
8. U.S. 29, upgrade from MD 650 to Howard Co. line,	2005, 2006, 2025
9. U.S. 50, interchange at Columbia Park Road,	2003
10. U.S. 301, upgrade, widen to 6 lanes from MD 5 to U.S. 50, 21.46 miles,	2020
11. MD 4 upgrade/widen to 6 lanes plus 2 HOV from MD 223 to I-95/I-495, 3.08 miles,	2010
12. MD 5, upgrade/widen to 4, 6, 7 lanes from U.S. 301 at T.B. to I-95, 10.5 miles,	2000, 2005, 2010
13. MD 28, widen to 6 lanes from Riffleford Rd. to Great Seneca Highway, 3.36 miles,	2004
14. MD 118 extended, construct 2, 6 lanes,	2020
15. MD 124, widen to 4, 6 lanes from Airpark Rd. to Warfield Rd., 3.46 miles,	2020
16. MD 201 Extended, construct 4 lanes from I-95/495 to MD 198, 7.32 miles,	2005, 2020
17. MD 201, widen to 6 lanes from Rittenhouse Road to Pontiac Street, 2.12 miles,	2005
18. MD 228, widen to 4 lanes from MD 210 to west of Mattawoman Creek, 3.1 miles,	2000
19. MD 355, widen to 6 lanes from MD 124 to MD 27, 4.27 miles, 1999,	2010
20. MD 450, widen to 4, 6 lanes from MD 193 to west of U.S. 301 and east of Whitfield Chapel Rd. to Seabrook Road, 7.57 miles,	2005, 2010
21. New Design Road, widen to 4 lanes,	2002
22. Father Hurley Blvd., widen to 4, 6 lanes,	2020
23. MD 119,Great Seneca Highway, widen to 6 lanes from Middlebrook Rd. to MD 124,	2015
24. Middlebrook Road , Middlebrook Road extended, widen to 6 lanes,	1999, 2020
25. MD 355 Relocated, construct 4 lanes, 2004	
26. Willowbrook Parkway, construct 4 lanes from U.S. 301 to MD 214, 2.8 miles,	2010
27. MD 85 widen to 4 lanes from English Muffin Way to Spectrum Dr., 2.13 miles,	2025
28. MD 414 extended, widen, construct 4 lanes from MD 210 to I-295, 3.75 miles,	2006

Virginia Projects	Anticipated Construction Date
29. I-95, Woodrow Wilson Bridge and approaches, build 12 lane bridge from VA 611 to MD 210	2007
30. I-95, widen to 8 lanes from Newington to VA 123,	2005
31. I-95, Eisenhower Valley access,	2007
32. I-95/I-395/I-495 interchange reconstruction,	2008
33. I-95, SOV access at Franconia-Springfield Parkway to and from the west,	2010
34. I-495, widen to 10 lanes, Dulles Toll to American Legion Bridge,	2008
35. U.S. 1, widen to 6, 7 lanes Stafford Co. line to VA 235 north, including interchange at VA 234,	2003, 2004, 2005, 2010
36. U.S. 15, widen to 4 lanes U.S. 29 to Loudoun County line,	2002, 2020
37. U.S. 15, widen to 4 lanes from Leesburg city line to Evergreen Mill Road,	2006
38. U.S. 29, Lee Highway, widen to 6 lanes N. Quincy St. to N. Kenmore St.,	2015
39. U.S. 29, widen to 6 lanes Nutley St. to I-495,	2005, 2010
40. U.S. 29, widen to 6 lanes from WCL Fairfax to Chain Bridge Rd., 2006 and Chain Bridge Road to Eaton Place,	2003
41. U.S. 29, widen to 6 lanes from Virginia Oaks Dr. to I-66, including interchange at VA 619/VA 55,	2006
42. U.S. 50, widen to 8 lanes from I-66 to wcl of Fairfax City,	2020
43. U.S. 50 interchange at Courthouse Road, 2005, upgrade to Route Type 1 from Pershing Drive to Ft. Myer Drive,	2020
44. U.S. 50, upgrade to Route Type 1 from Fairfax County line to Washington Blvd,	2020
45. U.S. 50, widen to 6 lanes from ecl of City of Fairfax to Arlington Co. line,	2020
46. U.S. 50, widen to 6 lanes from Loudoun County line to VA 661,	2020
47. U.S. 50, widen to 4 lanes from U.S. 50, Middleburg Bypass to VA616,	2003, 2005, 2010
48. U.S. 50, Middleburg Bypass, construct 2 lanes,	2010
49. VA 7, Leesburg Pike, widen to 6 lanes from wcl Alexandria to I-395,	2005
50. VA 7, Leesburg Pike, widen to 6 lanes from 7-Corners to Baileys Crossroads,	2020
51. VA 7, Leesburg Pike, widen to 6, 8 lanes from I-495 to Rolling Holly Drive,	2001, 2003, 2005, 2010
52. VA 7, Leesburg Pike, widen to 6 lanes from Lakeland Drive to VA 228,	2001
53. VA 7, Leesburg Pike, upgrade and widen to 6 lanes, including interchanges from VA 7/U.S. 15 east to Algonkian Parkway,	2003, 2005
54. VA 7/U.S. 15 Bypass, widen to 6 lanes from VA 7 west to VA 7/U.S. 15 east,	2006
55. VA 28, widen to 4, 6 lanes from Fauquier Co. line to VA 234 Bypass,	2007, 2010
56. VA 28, interchange at Barnesfield Rd.,	2003
57. VA 28, interchange at VA 625,	2005

Virginia Projects	Anticipated Construction Date
58. VA 28, widen to 5 lanes from Machen Rd. to Old Centerville Rd., 2001, 6 lanes from NCL of Manassas Park to U.S. 29, 2025 and 7 lanes from Old Centerville Rd. to U.S. 29, 2001, with interchange at U.S. 29,	2001
59. VA 28 Bypass, Tri-County Parkway, construct 4, 6 lanes from VA 234 Bypass to I-66,	2001, 2007, 2015
60. VA 28 Bypass, Tri-County Parkway, construct 4 lanes from VA 620 to U.S. 50,	2001
61. VA 120, Glebe Road, widen to 6 lanes from U.S. 50 to Henderson St.,	2010
62. VA 123, widen to 6 lanes from U.S. 50 to I-66,	2003
63. VA 123, widen to 4,6 lanes from Prince William Co. line to VA 620	2004, 2005, 2010, 2020
64. VA 123, widen to 6 lanes from U.S. 1 to Devil's Reach Road	, 2005, 2010
65. VA 123, widen to 8 lanes from VA 7 to I-495,	2010
66. VA 234, widen to 4 lanes from Waterway Drive to scl of Manassas,	2003, 2010
67. VA 234, widen to 6 lanes from U.S. 1 to I-95, including interchange at U.S. 1,	2005
68. VA 234 Bypass, construct 4 lanes from VA 649 to VA 28, 2001, 4 lanes from I-66 to Loudoun Co. line, 2010 and upgrade to a freeway and widen to 6 lanes from VA 649 to I-66,	2020
69. VA 236, widen to 5, 6 lanes from I-395 to Pickett Road,	2004, 2020
70. VA 641, widen to 6lanes from VA 3000 to VA 906	2000, 2020
71. Battlefield Parkway, construct 4 lanes from Dulles Greenway to Catoctin Branch,	2001, 2004, 2006, 2008, 2009
72. Dulles Access Road, widen to 6 lanes from airport to VA 123,	2010
73. Dulles Greenway, widen to 6 lanes from VA 772 to VA 28, with interchanges at VA 653 and VA 654,	2000, 2010
74. Elden Street/Centreville Road, widen to 6 lanes from Sterling Rd. to Monroe St.,	2003
75. Fairfax County Parkway, construct, 4, 5, 6 lanes from VA 123 to VA 7 -including interchange at Monument Dr./Fair Lakes Parkway,	2000, 2001, 2010, 2005
76. Fairfax County Parkway, construct, widen to 2, 6 lanes from VA 636 to VA 4600,	2005, 2010
77. Fairfax County Parkway, upgrade to Route Type 1 from Fullerton Rd. to Franconia-Springfield Parkway,	2005
78. Prince William Parkway, widen to 6 lanes from VA 776 to VA 640,	2025
79. Prince William Parkway, construct 4 lanes from I-95 to U.S. 1,	2005
80. Wilson Blvd., widen to 6 lanes from N. Frederick St. to N. George Mason Dr., 2010 and N. Quincy St. to Washington Blvd.,	2020

Figure B-2
Constrained Long-Range Plan
Major HOV and Transit Improvements

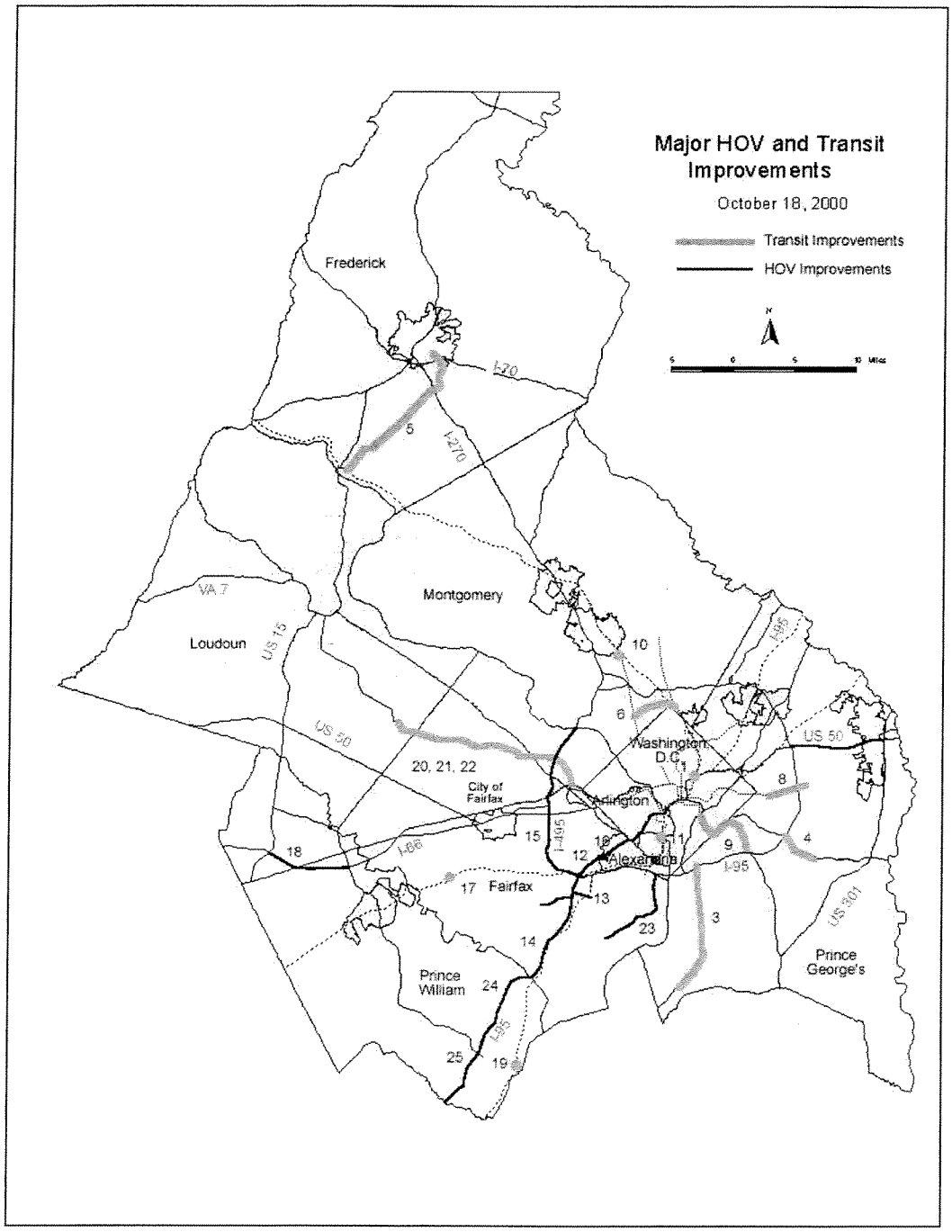


Table B-3
Major HOV & Transit Improvements on the Constrained Long-Range Plan

	District of Columbia	**Anticipated Construction Date**
1	New York Avenue Metro Station	n/a
2	H Street Passengerway to Union Station	n/a
	Maryland	
3	MD 210, HOV from MD 223 to I-495,	2007
4	MD 4, HOV from MD 223 to I-495,	2015
5	MARC rail extension from Point of Rocks to Frederick,	2002
6	Georgetown Branch Trolley from Bethesda to Silver Spring,	2010
7	U.S. 50 HOV from U.S. 301 to west of MD 410,	2004
8	Metrorail extension from Addison Road to Largo,	2005
9	Metrorail extension from Anacostia to Branch Avenue,	2001
10	Montross Crossing MARC station at MD 355 and Randolph Road,	2015
	Virginia	
11	Metrorail/VRE station at Potomac Yards,	2005
12	I-395 HOV, restripe to 3 lanes,	2010
13	Fairfax County Parkway/Franconia Springfield Parkway HOV,	2010
14	I-95 HOV, extend HOV lanes from Quantico Creek to Stafford County line, and restripe to 3 lanes from Quanitco Creek to I-495/I-395 intersection,	2005 2010
15	I-495 HOV, from I-95/I-395 interchange to American Legion Bridge,	2006, 2007, 2008
16	I-395, add HOV access to and from south at Seminary Road interchange,	2010
17	Western Fairfax VRE station,	2004
18	I-66 HOV from VA 234 to U.S. 15,	2003, 2005
19	Cherry Hill VRE station,	2000
20	Dulles Fixed Guideway Transit, expanded bus service	2001
21	Dulles Fixed Guideway Transit, Bus Rapid Transit (BRT),	2003
22	Dulles Fixed Guideway Transit, Rail,	2010
23	U.S. 1, HOV lanes from VA 235 to south city line of Alexandria,	2025
24	Intra-Woodbridge OmniLink bus service expansion	n/a
25	I-95/I-395 Transit Service Enhancements from Stafford Co. line to Potomac River	n/a

*The Potomac Yard Metrorail Station was not included as it is one of the alternatives being evaluated in this study.

B.2 ADDITIONAL POTENTIAL IMPROVEMENTS

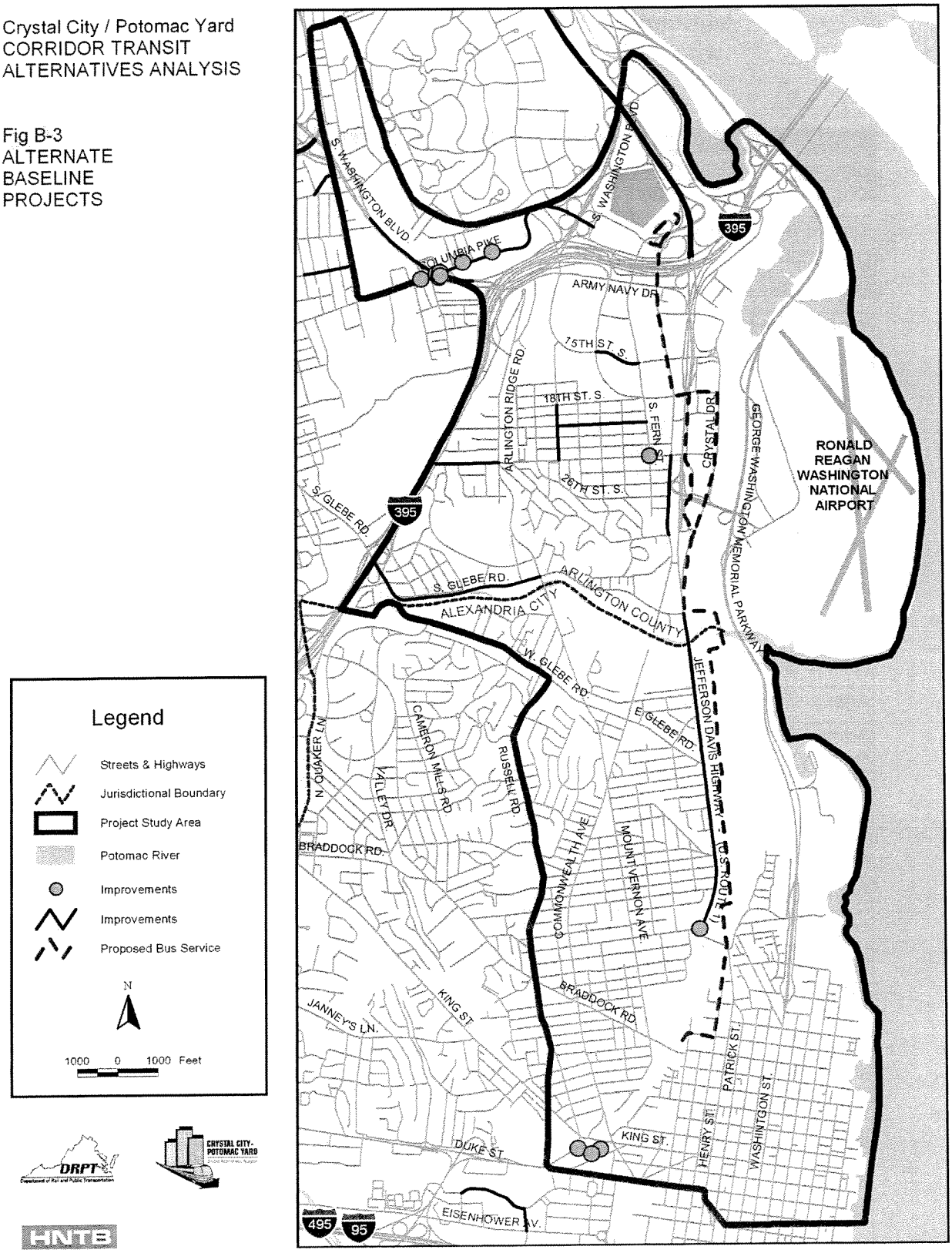
The location, traffic volume, and development potential of the Crystal City/Potomac Yard Corridor have subjected it to analysis on the local, regional, and state level. Assessments of transportation needs in connection with development of Potomac Yard have been conducted since the late 1980s. Ongoing planning has similarly assessed and considered transportation needs and potential solutions. Consequently, an obvious source of information on projects to include in an alternate baseline condition are the transportation plans of the City of Alexandria, Arlington County, the Metropolitan Washington Council of Governments, and Virginia Department of Transportation. An additional source of potential projects is the cooperative effort of these agencies is the *Northern Virginia 2020 Transportation Plan.* Subsequent to the analysis of the improvements identified from these sources, additional recommendations could be further developed.

Transportation plans, studies, and recommendations were reviewed to identify potential improvements to the study area's transportation network. One hundred and twenty two improvements were initially identified as either programmed improvements or concepts that should be studied further. The list was subsequently refined to include only those projects falling within the Crystal City/Potomac Yard Transit Alternatives Analysis study area. Projects related to the reconstruction of the Woodrow Wilson Bridge were deleted from the list. Similarly, transit studies in and around the corridor were not included. Finally, miscellaneous spot location complaints were left out of the final tabulation.

The source of each proposed improvement is identified along with the year implementation is anticipated. For purposes of this study all projects would be assumed to be implemented prior to 2025, the implementation horizon for this study. Figure B-3 displays these projects which are summarized on Table B-4.

Crystal City / Potomac Yard
CORRIDOR TRANSIT
ALTERNATIVES ANALYSIS

Fig B-3
ALTERNATE
BASELINE
PROJECTS



Legend

- Streets & Highways
- Jurisdictional Boundary
- Project Study Area
- Potomac River
- Improvements
- Improvements
- Proposed Bus Service

N

1000 0 1000 Feet

DRPT

CRYSTAL CITY-POTOMAC YARD

HNTB

Table B-4
Additional State, Local, and Regional Improvements within the Crystal City/Potomac Yard Study Area

Description
Highway Improvements
King Street: WCL Alexandria to I-395 near 30th St. & Intersection @ Beauregard
King Street: Quaker Lane to Dearing St. (Spot Improvements)
Mill Road: Road Extension
Monroe Street: Monroe Street Bridge Replacement (Monroe - Route 1)
Interchange Modifications: Washington Blvd. - 0.3km from S. Rte. 244 & 0.7km from N. Rte. 244 (PE & RW Only)
Intersection Improvements @ Rte. 244 & Washington Blvd.
Highway Improvement: Barrier Separated HOV on U.S. 1
Traffic/Pedestrian Signals: 23rd St. S. & S. Fern St.
Traffic/Pedestrian Signals: Columbia Pike & Navy Annex
Traffic/Pedestrian Signals: Lane Control Signals - Columbia Pike - East of Washington Blvd.
Traffic/Pedestrian Signals: Columbia Pike & S. Quinn St. (Upgrade)
Traffic/Pedestrian Signals: Lane Control Signals - Columbia Pike - Washington Blvd. to S. Scott St.
Development Related Improvements: S. Uhle St. (Walter Reed to 2nd St. S.)
Development Related Improvements: 15th St. S. (S Fern St. to S. Hayes St.)
Arterial Streets Safety/Capacity: Washington Blvd. (Bridge Over Columbia Pike)
Arterial Streets Safety/Capacity: S. Eads St. (23rd St. S. to Fort Scott Dr.)
Arterial Streets Safety/Capacity: Columbia Pike (S. Orme St. to Southgate Dr.) - (Cost: State Primary)
Arterial Streets Safety/Capacity: S. Glebe Rd. (I-395 to Arlington Ridge Road)
Arterial Streets Safety/Capacity: Jefferson Davis Highway (Arlington Blvd. to I-395)
Arterial Streets Safety/Capacity: Arlington Blvd. (N. Scott St. to Jefferson Davis Highway)
Arterial Streets Safety/Capacity: Arlington Blvd. (Washington Blvd. to N. Pershing Dr.)
Arterial Streets Safety/Capacity: I-395 (Alexandria City Line to 14th St. Bridge)
Rte. 1 (From Monroe Avenue & Four Mile Run)
26th St. S. & Rte.1
27th St. S. & Rte.1
33rd St. S. & Rte.1
Pentagon City Area Signals
North Tract Improvement (Roads, Bikeways, Pedestrian Facilities, and Transit Facilities)
South Arlington Connector
33rd St. S. (Crystal Dr. to U.S. 1)
S. Glebe Rd. (I-395 to S. Glebe Rd.)

Description
Washington Blvd (I-395 to D.C. Boundary)
S. Clark St. & Crystal Dr.
S. Glebe Rd. & Arlington Ridge Rd. (Left Turn Lanes STP-Safety (90%))
Transit Improvements
Union Station: Pedestrian Improvements
Bus Transfer @ Shirlington
WMATA: King Street Metro Station Improvements
HOV & Transit: I-395 – Add HOV Access To & From South @ Seminary Rd. Interchange
HOV & Transit: U.S. 1 – HOV Lanes From VA 235 North to South City Line of Alexandria
Pedestrian/Bicycle Improvements
Pedestrian Systems: 8th St. S. (S. Barton to S. Courthouse)
Pedestrian Systems: Columbia Pike (Navy Annex to S. Ode St.)
Pedestrian Systems: S. Joyce St. (18th St. S. to 23rd St. S.)
Pedestrian Systems: 23rd St. S. (Arlington Ridge Rd. to S. Army-Navy Rd.)
Pedestrian Systems: 20th St. S. (S. Fern St. to S. Joyce St.)
Pedestrian Systems: S. Lowell St. (22nd St. S. to 24th St. S.)
Pedestrian Systems: S. Highland St. (2nd St. S. to 6th St. S.)
S. Eads St. (11th St. S. to 12th St. S.)
Columbia Pike (S. Joyce St. to Pentagon south parking lot)
Army Navy Dr. (20th St. S. to 1700 block)
Old Jefferson Davis Highway (6th St. S. to Boundary Dr.)
19th St. S. (S. Fern St. to S. Joyce St.)

All of these improvements would be considered as relatively low-cost improvements that could be made as a means of improving transportation in place of any major transit investment within the corridor.

B.3 DESCRIPTION OF TRANSIT & TSM IMPROVEMENTS

Current transit operations within the study area offer its residents and employees a fairly high level of service. Service from WMATA, DASH, ART, and the Fairfax Connector traverse the area with peak hour headways of no more than 30 minutes and frequently much closer to 15 minutes. In the off-peak periods, service is less frequent but travelers can board buses throughout the study area at least every thirty minutes and within the Crystal City area as frequently as every five minutes. Figure B-4 shows the existing bus route system within the study area.

The WMATA Regional Bus Study is examining transit service throughout the Metropolitan Washington region. The study is moving toward a recommendation of thirty-minute service throughout the region and at least

Crystal City / Potomac Yard
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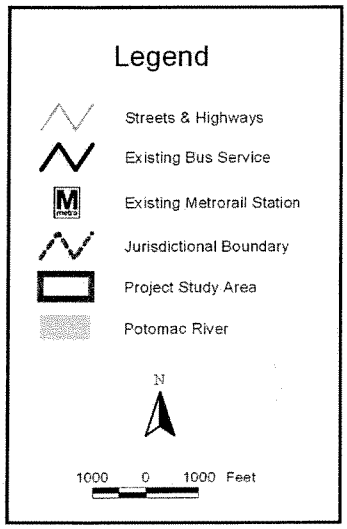
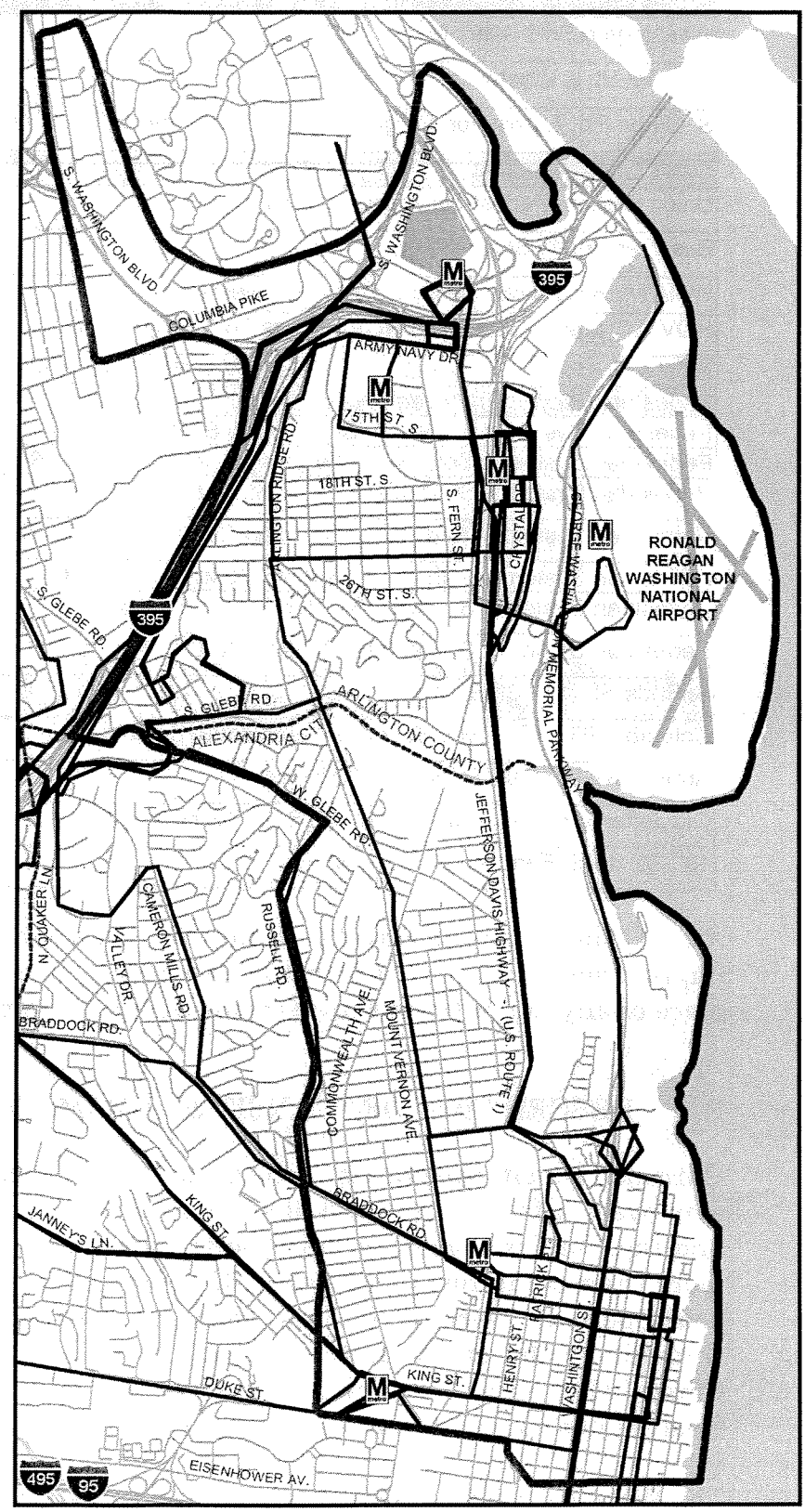
ALTERNATIVES ANALYSIS

Fig B-4
EXISTING BUS SERVICE





10-minute service in core areas throughout the day. With minimal increases in current service, the existing route structure could supply the additional service to meet the Study's objectives.

Existing and additional bus service would also be enhanced through the use of a signal preemption or priority service in the heavily traveled and high volume bus corridors. The remainder of this section describes transit and signalization improvements that might improve transit service within the corridor at a relatively modest cost.

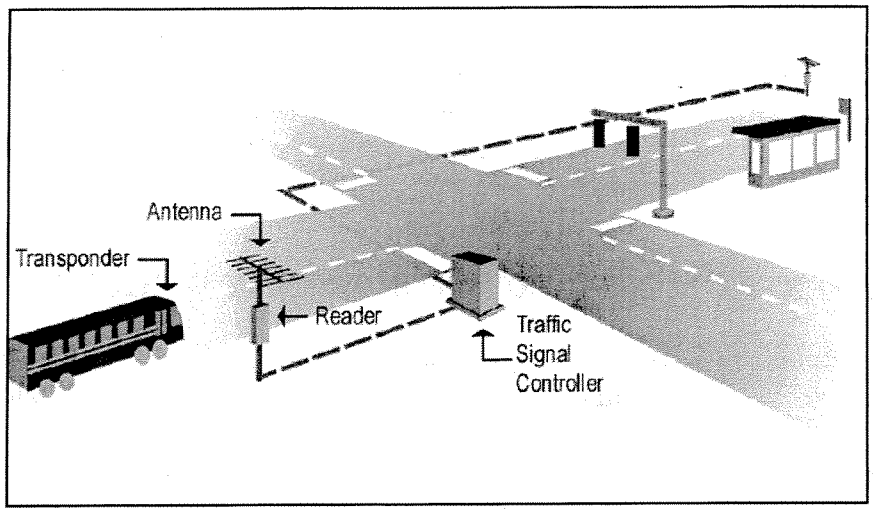
B.4 TRAFFIC SIGNAL PRIORITY FOR TRANSIT VEHICLES

Transit vehicles can be given priority treatment as they travel through signalized intersections under a system known as traffic signal prioritization. Traffic signal priority is the process in which a bus carrying a transponder communicates with an approaching signal and automatically requests additional green time allowing the bus to pass through the intersection. Traffic signal priority can:

- Cause a red signal to turn green as the bus approaches
- Cause a red signal to turn green as a bus, running behind schedule, approaches
- Extend the green phase to allow a nearby bus to pass through the intersection when under normal timing it would receive a red signal.

Figure B-5 shows a schematic of an intersection equipped with the technology required to perform traffic signal priority. The system is composed of an on-board transponder, wayside antenna, and interface with the local traffic signal controller.

Figure B-5
Traffic Signal Priority System



Within the Crystal City/Potomac Yard Corridor, the major candidates for traffic signal prioritization lie along the Jefferson Davis Highway (U.S. 1). From North to South, candidate locations for traffic signal priority are the intersections of Jefferson Davis Highway with:

- 23rd St. S.
- 27th St. S.
- South Glebe Road
- Reed Avenue
- Evans Lane
- East Glebe Road
- Mount Ida Avenue & Custis Avenue
- Howell Avenue
- Monroe Avenue

Traffic signal prioritization has been proven to reduce transit travel times by as much as ten percent. A transit priority signal project in King County, Washington, produced noticeable improvements in travel times and with only marginal impact to general traffic. The test site for this project was a 2.1-mile stretch of Route 7 on Rainier Avenue South, a route that has the highest ridership of any in the Metro system, with more than 2-million passenger trips per year into downtown Seattle. A summary of the results of that traffic signal priority system showed:

- Bus travel delay reduced by 34%
- Traffic signal related stops by buses reduced by 24%, and as high as 43%
- Estimated transit travel timesaving of 8%
- No side street cycle failures
- Less than 4.0 seconds/vehicle increase in side street delay
- No change in intersection level of service.

An analysis of another corridor in Raleigh, North Carolina suggested a travel time saving of as much as ten percent on a thirty-minute bus route. Saving within the Route 1 corridor of Alexandria and Arlington would be expected to be as much as ten percent.

B.5. TRAFFIC SIGNAL COORDINATION

Significant improvements in travel time, both for transit and general traffic, can be achieved through the installation of coordinated traffic signal systems. The conversion of an uncoordinated series of signals to a computer-controlled coordinated system can achieve reductions in delay of as much as twenty-five percent, with even greater decreases in stop delay at signals. The principal candidate route for such a system would be along the full length of the Route 1 corridor.

Currently, both Arlington County and the City of Alexandria operate coordinated signal systems. Arlington County uses a mixture of the conventional Monarch traffic management system and the SCOOT system. The SCOOT (Split Cycle Offset Optimization Technique) system operates by analyzing information from sensors buried under the pavement. SCOOT can automatically adapt year-round to changing volumes of commercial and commuter traffic (24 hours a day). Sixty of the county's 225 intersections are controlled by the SCOOT system, including the length of Route 1 within the County's portion of the study area. The remaining 165 interchanges are run by predetermined signal-timing plans, often referred to as the Monarch traffic management system. The City of Alexandria uses the conventional, Monarch traffic management system throughout all of its interchanges.

The signal system along Route 1, therefore, is coordinated within each of the two jurisdictions. Discussions between the staffs of the two jurisdictions may result in improved coordination at the interface of the two systems in the vicinity of Four Mile Run. There is no expectation, however, of consolidating the two systems into a single system. Signals in Arlington and Alexandria will continue to operate under separate controls. The use of separate systems to control portions of the same route is not exceptional and is typical of many urban systems in which separate zones are established for the control of

signals with geographic boundaries. Signals can then be coordinated to respond to local traffic demands. Because of the presence of the Arlington and Alexandria coordinated signal systems, no further improvements are proposed.

B.6 ADDITIONAL BUS SERVICE

The primary candidate route for increased bus service is along the Route 1 corridor. This route has the potential to best serve the existing and proposed high-density development in the corridor. The primarily residential nature of the remainder of the corridor does not warrant high frequency bus service. The existing coverage of transit service on at least 30 minute headways is sufficient based upon currently proposed guidelines for transit in the Metropolitan Washington area.

Future bus transit operations could serve the portions of the study area with the densest development and for which Alexandria and Arlington are most interested in promoting transit-oriented development. Transit operations in this "core area" could be implemented with frequent, small transit vehicles similar to those used by Alexandria's DASH system and certain ART and WMATA buses. Twenty-eight to thirty-two foot buses could serve the corridor on existing or proposed future streets, operating in mixed traffic.

The route would commence at the Braddock Road Metrorail Station, exiting onto Madison Street and then turning north onto Fayette Street. The route would continue onto U.S. Route 1, crossing on the proposed realigned Monroe Avenue Bridge and continuing to the proposed Main Street. Alternatively, if the Monroe Avenue Bridge were not realigned, then the route would continue to Potomac Avenue, turning onto Main Street at Howell Avenue. In either case, transit would continue north on Main Street continuing through the retail center adjacent to the existing stores.

At the north end of the retail center, the transit route would turn east and then north across the easternmost bridge across Four Mile Run. The route would then head west along South Glebe Road. Just east of U.S. Route 1, the transit route would turn northward along Crystal Drive and the proposed transitway. The route would then continue along Crystal Drive where it would turn west on South 18th Street crossing Clark Street and Jefferson Davis Highway to Eads Street. The route would then turn north on South Eads Street and continue to the Pentagon intermodal station.

The southbound route would mirror the northbound route except that it would travel on Clark Street between South 18th Street and the intersection of Potomac Avenue with Crystal Drive. Figure B-6 depicts the additional transit proposed under the "Baseline Lite" condition.

B.7 SUMMARY OF BASELINE CONDITIONS

Consistent with FTA guidance on alternatives analyses, two baseline conditions are described below. The first baseline includes existing conditions plus those transportation improvements identified within the MWCOG Constrained Long-Range Plan within the vicinity of the project study area. The proposed heavy rail station in Potomac Yard, has been excluded for the purposes of this study as it is one of the array of alternatives that will be considered in this alternatives analysis. The full list of CLRP improvements is identified in Table B-2 and B-3 of this Appendix.

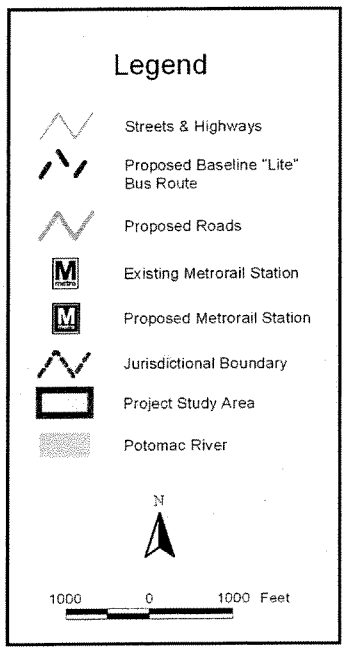
The second, or "Baseline Lite" condition, can best be described as the existing and committed projects plus other low-cost transit, and travel system management (TSM) measures that could be employed within the study horizon. The alternative baseline, therefore, includes:

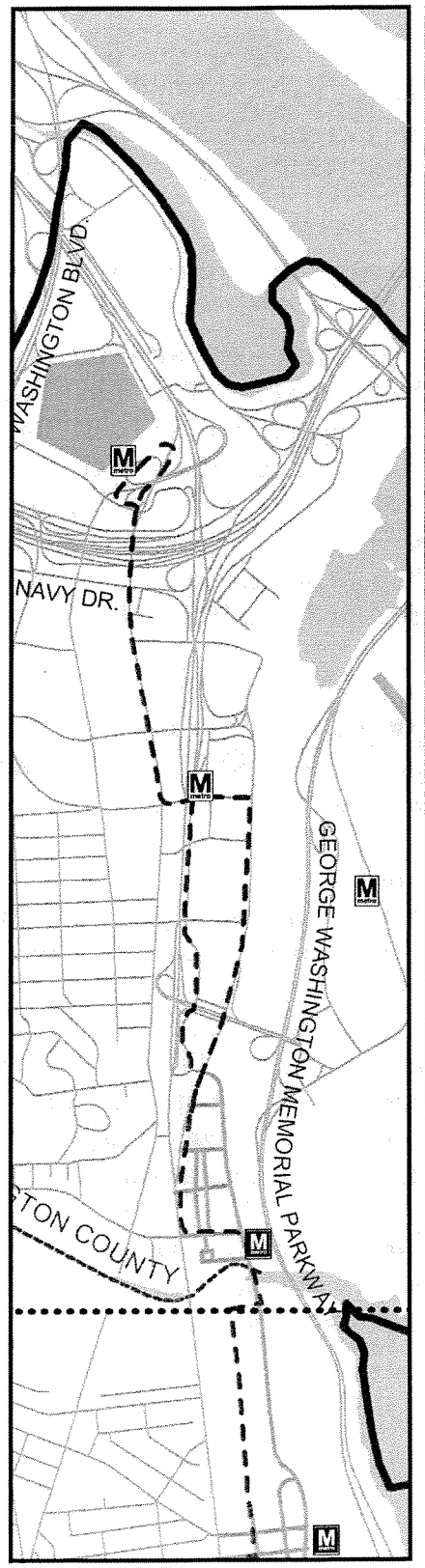
1. Existing conditions
2. Transportation improvements identified in the CLRP with the exception of major transit investments considered as alternatives in this analysis (Table B-2 and Table B-3)
3. Other transportation improvement projects identified in state, local and regional plans. (Table B-4)
4. Traffic signal priority for transit vehicles running along Route 1
5. New 15-minute bus service along a route running through the center of the core portion of the study area.

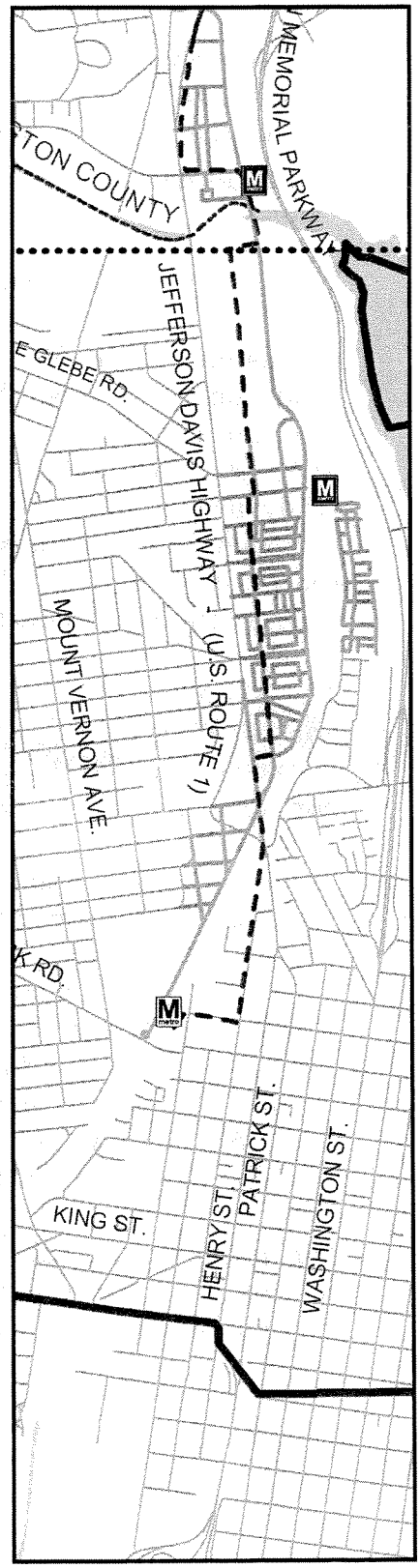
For purposes of this study, the alternate baseline, "Baseline Lite" was selected as the basis for comparison. The evaluation of the Tier 2 alternatives was made against this condition.

Crystal City / Potomac Yard
CORRIDOR TRANSIT
ALTERNATIVES ANALYSIS

Fig B-6
BASELINE "LITE"







APPENDIX C – Analysis of Land Use Compatibility and Potential Noise Impacts

CRYSTAL CITY - POTOMAC YARD Transit Alternatives Analysis
Evaluation of Alternatives
Tier One Analysis

	Alternatives								
	A	B	C	D	E	F	G	H	J
Total length of line (ft)	24440	26291	30108	29403	29403	27156	25442	28803	28803
in miles	4.63	4.98	5.70	5.57	5.57	5.14	4.82	5.46	5.46
Distance of line adjacent to transit-supportive areas (ft)	19722	25157	28400	25056	26678	25648	25313	26746	27888
in miles	3.74	4.76	5.38	4.75	5.05	4.86	4.79	5.07	5.28
Distance of line adjacent to Potentialy Sensitive areas (ft)	1074	0	1124	5523	165	270	918	4023	0
in miles	0.20	0.00	0.21	1.05	0.03	0.05	0.17	0.76	0.00
Percent Transit-supportive	91%	97%	99%	83%	92%	96%	95%	93%	90%
Percent Sensitive	4%	0%	0%	3%	3%	1%	4%	10%	10%

Notes:
Preliminary information--subject to change
Percentages may total to more than 100% due to double-counting
Percentages may not total 100% due to areas designated as neither supportive nor sensitive

CRYSTAL CITY - POTOMAC YARD Transit Alternatives Analysis
Evaluation of Alternatives
Tier One Analysis

	Zone 1 (North Tract)								
	Alternatives								
	A	B	C	D	E	F	G	H	J
Total length of line (ft)	24440	26291	30108	29403	29403	27156	25442	28803	28803
in miles	4.63	4.98	5.70	5.57	5.57	5.14	4.82	5.46	5.46
Length of line in zone 1	3770	5110	6259	3714	7551	4582	5270	4334	7566
Distance of line adjacent to transit-supportive areas (ft)	3770	5110	6259	3714	7551	4582	5270	4334	7566
in miles	0.71	0.97	1.19	0.70	1.43	0.87	1.00	0.82	1.43
Distance of line adjacent to Potentialy Sensitive areas (ft)	0	0	0	0	0	0	0	0	0
in miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent Transit-supportive	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent Sensitive	0%	0%	0%	0%	0%	0%	0%	0%	0%

Notes:
Preliminary information--subject to change
Percentages may total to more than 100% due to double-counting
Percentages may not total 100% due to areas designated as neither supportive nor sensitive

CRYSTAL CITY - POTOMAC YARD Transit Alternatives Analysis
Evaluation of Alternatives
Tier One Analysis

	Zone 2 (Crystal City)								
	Alternatives								
	A	B	C	D	E	F	G	H	J
Total length of line (ft)	24440	26291	30108	29403	29403	27156	25442	28803	28803
in miles	4.63	4.98	5.70	5.57	5.57	5.14	4.82	5.46	5.46
Total line length in Zone 2	9701	9600	10674	10604	8722	11014	9983	10260	9600
Distance of line adjacent to transit-supportive areas (ft)	5471	9143	10587	9212	7527	10419	9983	10252	9487
in miles	1.04	1.73	2.01	1.74	1.43	1.97	1.89	1.94	1.80
Distance of line adjacent to Potentialy Sensitive areas (ft)	1074	0	0	973	0	0	753	0	0
in miles	0.20	0.00	0.00	0.18	0.00	0.00	0.14	0.00	0.00
Percent Transit-supportive	56%	95%	99%	87%	86%	95%	100%	100%	99%
Percent Sensitive	11%	0%	0%	9%	0%	0%	8%	0%	0%

Notes:
Preliminary information--subject to change
Percentages may total to more than 100% due to double-counting
Percentages may not total 100% due to areas designated as neither supportive nor sensitive

CRYSTAL CITY - POTOMAC YARD Transit Alternatives Analysis
Evaluation of Alternatives
Tier One Analysis

	Zone 3 (Potomac Yard)								
	Alternatives								
	A	B	C	D	E	F	G	H	J
Total length of line (ft)	24440	26291	30108	29403	29403	27156	25442	28803	28803
in miles	4.63	4.98	5.70	5.57	5.57	5.14	4.82	5.46	5.46
Total line length in Zone 3	6566.00	6991.00	7194.00	7058.00	6491.00	6846.00	6586.00	7014.00	7026.00
Distance of line adjacent to transit-supportive areas (ft)	6536	6992	7152	7058	6277	6864	6312	6991	7026
in miles	1.24	1.32	1.35	1.34	1.19	1.30	1.20	1.32	1.33
Distance of line adjacent to Potentialy Sensitive areas (ft)	0	0	0	0	165	0	164	0	0
in miles	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00
Percent Transit-supportive	100%	100%	99%	100%	97%	100%	96%	100%	100%
Percent Sensitive	0%	0%	0%	0%	3%	0%	2%	0%	0%

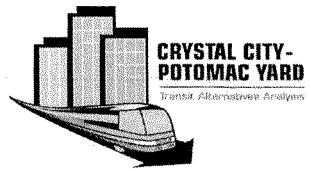
Notes:
Preliminary information--subject to change
Percentages may total to more than 100% due to double-counting
Percentages may not total 100% due to areas designated as neither supportive nor sensitive

CRYSTAL CITY - POTOMAC YARD Transit Alternatives Analysis
Evaluation of Alternatives
Tier One Analysis

	Zone 4 (Monroe Bridge)								
	Alternatives								
	A	B	C	D	E	F	G	H	J
Total length of line (ft)	24440	26291	30108	29403	29403	27156	25442	28803	28803
in miles	4.63	4.98	5.70	5.57	5.57	5.14	4.82	5.46	5.46
Total line length in Zone 4	2365.00	2253.00	2410.00	2371.00	2313.00	2246.00	2228.00	2196.00	2292.00
Distance of line adjacent to transit-supportive areas (ft)	2365	2253	1843	1441	2313	2226	2232	2196	2292
in miles	0.45	0.43	0.35	0.27	0.44	0.42	0.42	0.42	0.43
Distance of line adjacent to Potentialy Sensitive areas (ft)	0	0	501	1058	0	0	0	804	0
in miles	0.00	0.00	0.09	0.20	0.00	0.00	0.00	0.15	0.00
Percent Transit-supportive	100%	100%	76%	61%	100%	99%	100%	100%	100%
Percent Sensitive	0%	0%	21%	45%	0%	0%	0%	37%	0%

Notes:
Preliminary information--subject to change
Percentages may total to more than 100% due to double-counting
Percentages may not total 100% due to areas designated as neither supportive nor sensitive

CRYSTAL CITY - POTOMAC YARD Transit Alternatives Analysis
Evaluation of Alternatives
Tier One Analysis



	Zone 5 (Braddock Road)								
	Alternatives								
	A	B	C	D	E	F	G	H	J
Total length of line (ft)	24440	26291	30108	29403	29403	27156	25442	28803	28803
in miles	4.63	4.98	5.70	5.57	5.57	5.14	4.82	5.46	5.46
Total line length Zone 5	1579.00	2165.00	3169.00	5605.00	3812.00	1981.00	1565.00	4008.00	1527.00
Distance of line adjacent to transit-supportive areas (ft)	1579	1659	2559	3631	3010	1557	1516	2972	1517
in miles	0.30	0.31	0.48	0.69	0.57	0.29	0.29	0.56	0.29
Distance of line adjacent to Potentialy Sensitive areas (ft)	0	0	623	3492	0	270	0	3219	0
in miles	0.00	0.00	0.12	0.66	0.00	0.05	0.00	0.61	0.00
Percent Transit-supportive	100%	77%	81%	65%	79%	79%	97%	74%	99%
Percent Sensitive	0%	0%	20%	62%	0%	14%	0%	80%	0%

Notes:
Preliminary information--subject to change
Percentages may total to more than 100% due to double-counting
Percentages may not total 100% due to areas designated as neither supportive nor sensitive

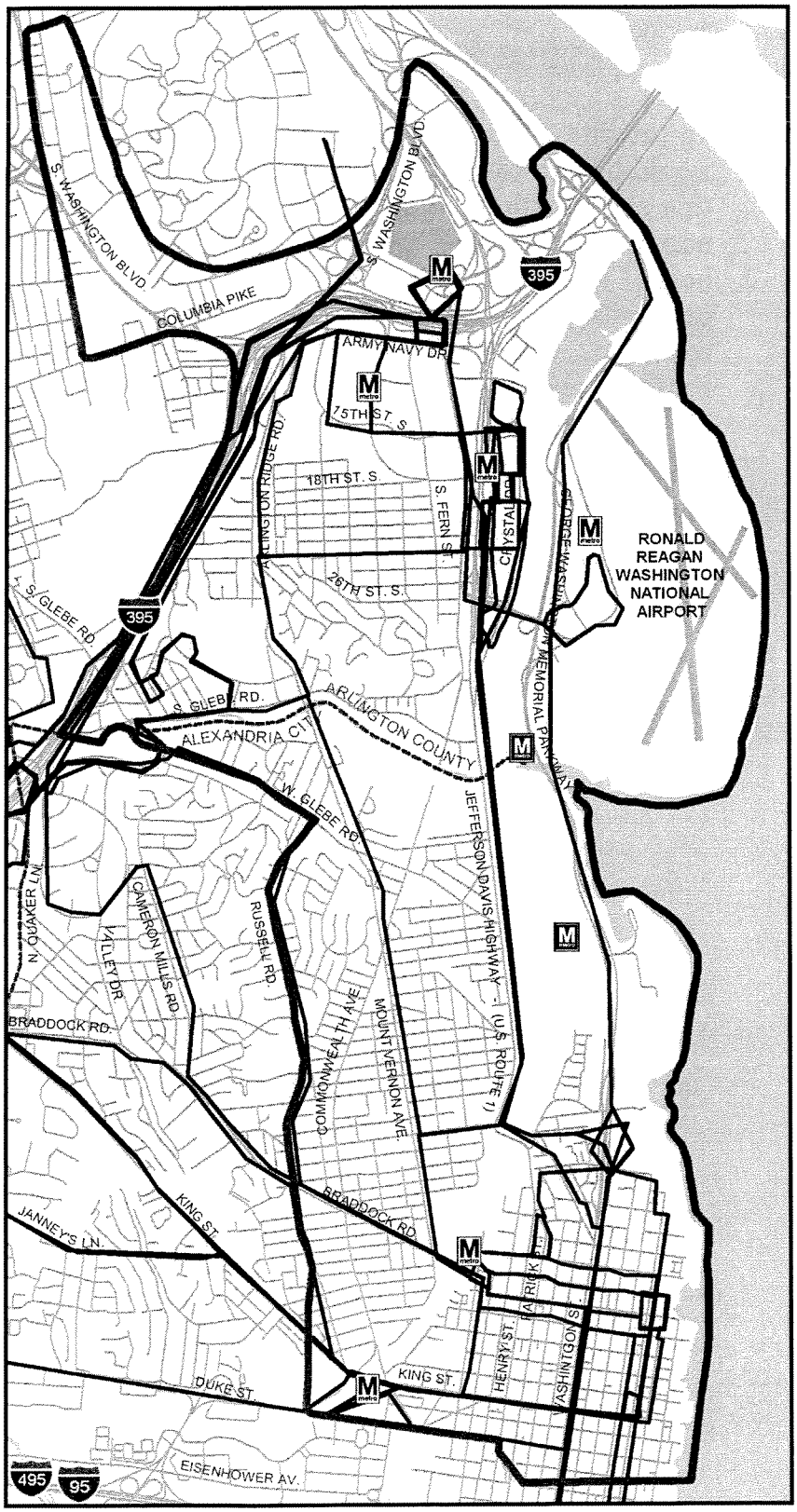
APPENDIX D – Feeder Bus Network

D. FEEDER BUS NETWORK

To provide 15-minute headways throughout the study area, each alternative would have a corresponding feeder bus network. *Coverage* for the purposes of this study is defined as within a one-quarter mile radius of the transit. Any north-south transit line with a one-quarter mile radius would cover less than half of the study area. A Metrorail alternative would be even less. For the purposes of this study, the study Team created routes that would provide full coverage. The networks created would *supplement* not replace the current route system by WMATA, ART, DASH, et cetera. The routes created for this study were used solely for the purpose of "filling the gaps" of the current service. The actual routes would depend on the individual transit agencies.

Crystal City / Potomac Yard
CORRIDOR TRANSIT
ALTERNATIVES ANALYSIS

Fig D-1
EXISTING BUS SERVICE



Legend

- Streets & Highways
- Existing Bus Service
- Existing Metrorail Station
- Proposed Metrorail Station
- Jurisdictional Boundary
- Project Study Area
- Potomac River

N

1000 0 1000 Feet

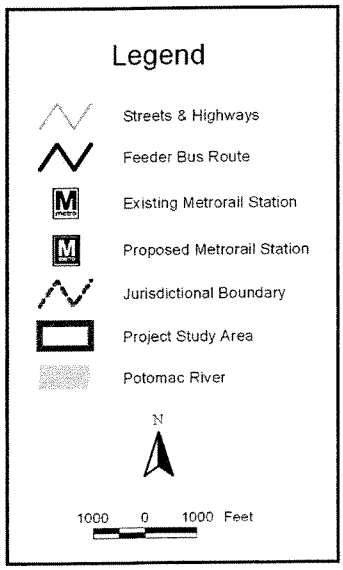
DRPT

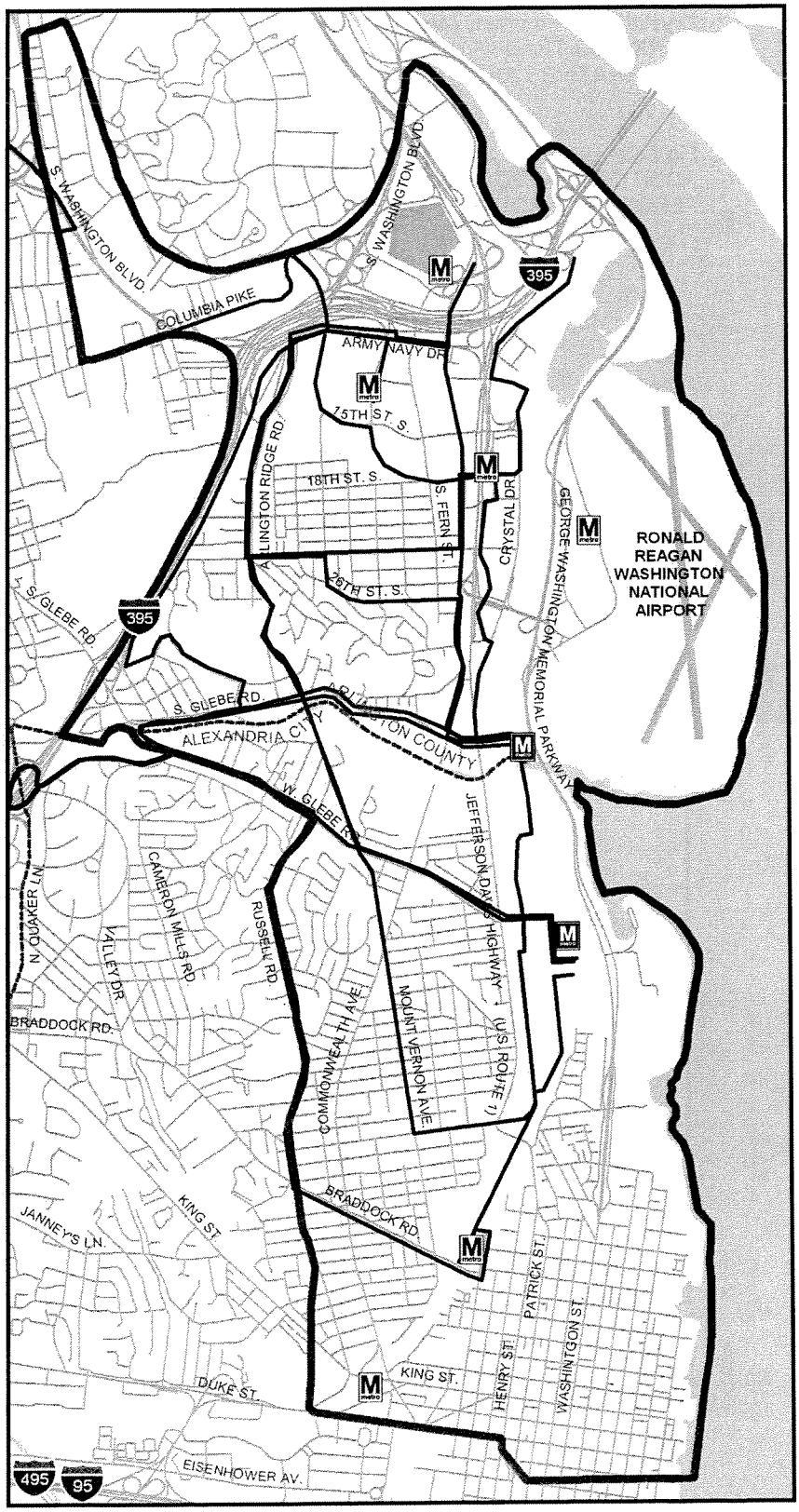
CRYSTAL CITY-POTOMAC YARD

HNTB

Crystal City / Potomac Yard
CORRIDOR TRANSIT
ALTERNATIVES ANALYSIS

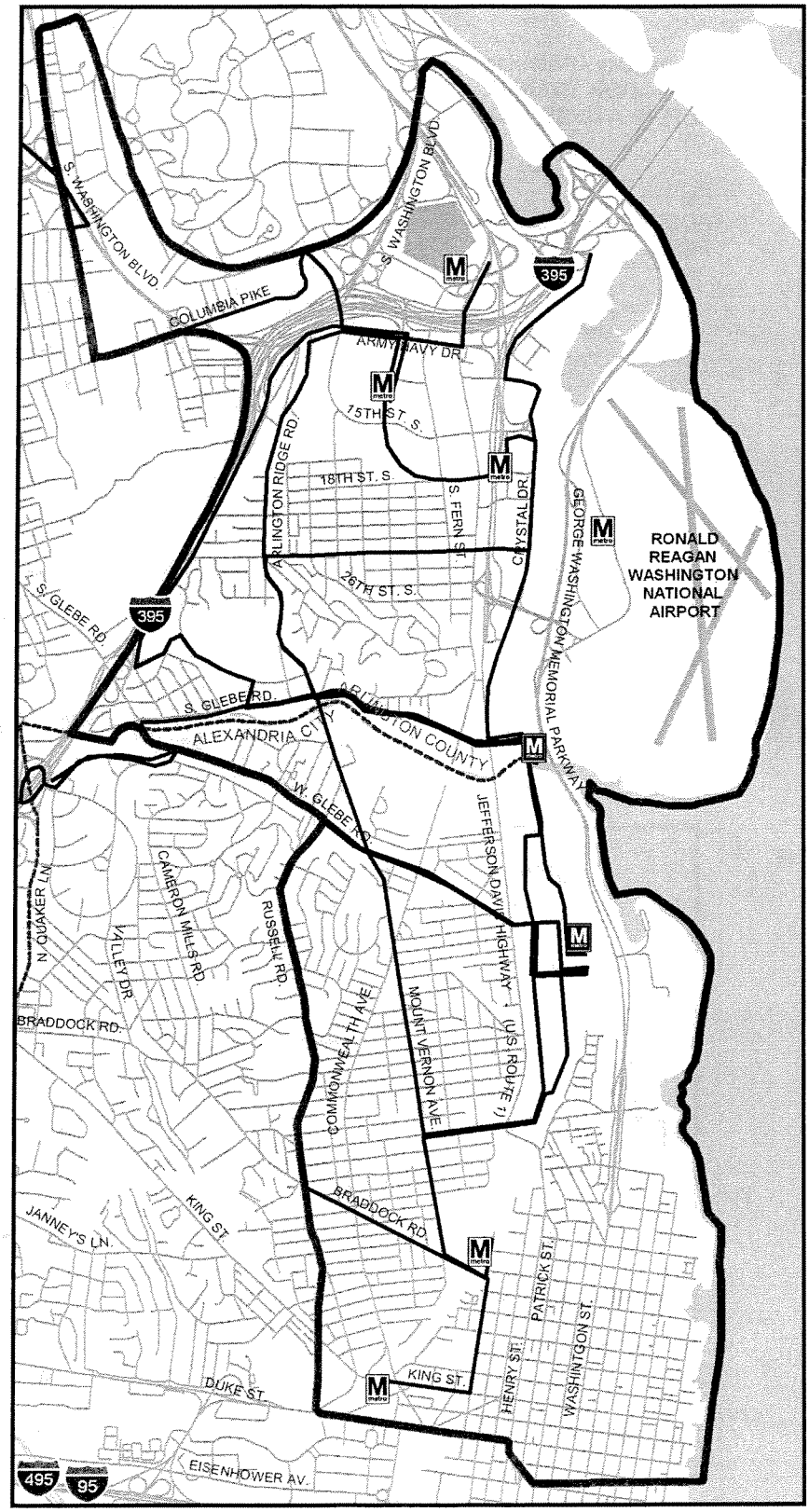
Fig D-2
ADDITIONAL PEAK PERIOD
FEEDER BUS ROUTES





Crystal City / Potomac Yard
CORRIDOR TRANSIT
ALTERNATIVES ANALYSIS

Fig D-3
ADDITIONAL MIDDAY
FEEDER BUS ROUTES



Crystal City - Potomac Yard
Transit Corridor Alternatives Analysis

Financing Strategy

Cash Flow -- BRT Eads Street Alternative

Assumptions

Ridership
- Daily Riders in 2025
  - System 36,074
  - Annual/Daily Riders 250

2025 Passenger Revenues (2002 dollars)
- System $7,838,435
- Feeder Bus $1,327,168

Advertising on Buses
- Ad Income $14,423,500
- Number of buses 1,443
- $ per year per bus $9,995

BRT bus w/o spare 2025 10
Feeder Buses 2025 7

Capacity
- capacity of BRT veh. 220
- capacity of feeder bus 80
- max BRT load point 2025 2200
- max. feeder riders/hr '25 560

Local Gov. Contribution $6,580,000

2025 Op. & Maint. Expenses (2002 Dollars)
- System $5,300,000
- Feeder Bus $4,110,000

Maintenance Expansion
- Per BRT Vehicle $250,000

Inflation Rate
- Revenue 1.49%
- Everything else 2.98%

Bond Issue
- Amount $15,000,000
- Selling Expense (%) 10.00%
- Interest Rate Paid 6.00%

Interest Earned on Fund 4%

Capital Costs (2002 Dollars)
- BRT system w/ feeders $50,354,682

Crystal City/Potomac Yard Corridor Transit Alternatives Analysis
Cash Flow - BRT Eads Street Alternative - years 2000 to 2023

percent change pop			1.30%	1.08%	1.07%	1.05%	1.04%	1.03%	0.87%	0.69%	0.68%	0.68%	1.35%	0.87%	0.86%	0.85%	0.85%	0.84%	1.24%	1.22%	1.21%
percent change emp			0.40%	0.92%	0.91%	0.90%	0.89%	0.89%	0.89%	0.70%	0.70%	0.69%	1.38%	0.95%	0.94%	0.94%	0.93%	0.92%	0.89%	0.89%	0.88%
Year	**2000**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Population																					
of Study Area (MWCOG)	61,541	64,913	65,755	66,464	67,173	67,881	68,590	69,298	69,902	70,385	70,867	71,350	72,314	72,941	73,568	74,194	74,821	75,447	76,380	77,312	78,244
SA Employment (COG)	135,368	137,569	138,119	139,388	140,657	141,926	143,195	144,464	145,747	146,774	147,800	148,826	150,878	152,317	153,756	155,195	156,634	158,072	159,485	160,898	162,311
of Potomac Yard (COG)	1,506	2,837	3169	3,406	3,643	3,880	4117	4353	4,593	4,832	5,071	5,310	5,549	5,788	6,091	6,265	6,504	6,742	6,903	7,063	7,223
PY Employment (COG)	4,520	5,067	5203	5,601	5,998	6,395	6792	7189	7,583	7,977	8,370	8,764	9,157	9,516	9,874	10,233	10,591	10,949	11,466	11,983	12,500
Daily Ridership										31,943	32,165	32,387	32,831	33,135	33,439	33,742	34,046	34,350	34,695	35,040	35,385
											0.69%	**0.69%**	**1.37%**	**0.93%**	**0.92%**	**0.91%**	**0.90%**	**0.89%**	**1.00%**	**0.99%**	**0.98%**
Annual Ridership																					
Bus Rapid Transit																					
BRT System		0	0	0	0	0	0	0	0	7,985,750	8,041,250	8,096,750	8,207,750	8,283,750	8,359,750	8,435,500	8,511,500	8,587,500	8,673,750	8,760,000	8,846,250
Maximum Load Point										1,675	1,687	1,699	1,722	1,738	1,754	1,770	1,786	1,802	1,820	1,838	1,856
Number of displaced users	0	0	0	0	0	0	0	0	0	5,550,096	5,588,669	5,627,241	5,704,386	5,757,206	5,810,026	5,862,673	5,915,493	5,968,313	6,028,256	6,088,200	6,148,144
Feeder Buses																					
Feeder Bus Baseline		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feeder Bus w/BRT Syst		0	0	0	0	0	0	0	0	1,772,180	1,784,497	1,796,813	1,821,446	1,838,312	1,855,177	1,871,988	1,888,853	1,905,719	1,924,860	1,944,000	1,963,140
Net new feederbus riders										1,772,180	1,784,497	1,796,813	1,821,446	1,838,312	1,855,177	1,871,988	1,888,853	1,905,719	1,924,860	1,944,000	1,963,140
Displaced riders	0	0	0	0	0	0	0	0	0	1,084,574	1,092,112	1,099,650	1,114,725	1,125,047	1,135,369	1,145,656	1,155,978	1,166,300	1,178,014	1,189,728	1,201,442
Future Procurement																					
Load factor of BRT										0.76	0.77	0.77	0.78	0.79	0.80	0.73	0.74	0.74	0.75	0.76	0.77
BRT vehicles required										10	10	10	10	10	10	10	10	10	10	10	11
Feeders required										7	7	7	7	7	7	7	7	7	7	7	8
BRT overhaul/replace?										no	no	no	no	no	no	no	no	no	no	overhaul	no
Feeder overhaul/replace?										no	no	no	no	no	no	no	no	no	no	overhaul	no
Amounts in 2002 Dollars																					
BRT System Fares		$0	$0	$0	$0	$0	$0	$0	$0	$6,940,820	$6,989,057	$7,037,295	$7,133,771	$7,199,826	$7,265,882	$7,331,720	$7,397,776	$7,463,831	$7,538,795	$7,613,759	$7,688,724
BRT non new transit fares	$0	$0	$0	$0	$0	$0	$0	$0	$0	($4,823,870)	($4,857,395)	($4,890,920)	($4,957,971)	($5,003,879)	($5,049,788)	($5,095,545)	($5,141,454)	($5,187,363)	($5,239,463)	($5,291,563)	($5,343,663)
Feeder Fares		$0	$0	$0	$0	$0	$0	$0	$0	$1,107,613	$1,115,310	$1,123,008	$1,138,404	$1,148,945	$1,159,486	$1,169,992	$1,180,533	$1,191,074	$1,203,037	$1,215,000	$1,226,963
Feeder System non new bus fares	$0	$0	$0	$0	$0	$0	$0	$0	$0	($406,715)	($409,542)	($412,369)	($418,022)	($421,893)	($425,763)	($429,621)	($433,492)	($437,363)	($441,755)	($446,148)	($450,541)
Advertising		$0	$0	$0	$0	$0	$0	$0	$0	$99,955	$99,955	$99,955	$99,955	$99,955	$99,955	$99,955	$99,955	$99,955	$99,955	$99,955	$109,950
Local Gov. Contrib.		$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000
BRT O & M Expense		$0	$0	$0	$0	$0	$0	$0	$0	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,300,000	$5,830,000
Feeder O & M Expense		$0	$0	$0	$0	$0	$0	$0	$0	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,110,000	$4,697,143
BRT overhaul		0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,463,000	$0
Feeder Overhaul		0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$700,000	$0
Add'l BRT Procurement		0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$399,900	$0
BRT Yard Expansion		0	0	0	0	0	0	$1,250,000	$1,250,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$500,000	$0	$0
Add'l Feeder Procure.		0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$300,000	$0
Sources of Cash																					
BRT System Fares		$0	$0	$0	$0	$0	$0	$0	$0	$8,047,172	$8,223,835	$8,403,976	$8,646,124	$8,856,203	$9,070,623	$9,289,191	$9,512,539	$9,740,480	$9,984,901	$10,234,443	$10,489,205
BRT non new transit fares	$0	$0	$0	$0	$0	$0	$0	$0	$0	($5,592,785)	($5,715,565)	($5,840,763)	($6,009,056)	($6,155,061)	($6,304,083)	($6,455,988)	($6,611,214)	($6,769,633)	($6,939,506)	($7,112,938)	($7,289,997)
Feeder Fares		$0	$0	$0	$0	$0	$0	$0	$0	$1,284,164	$1,312,356	$1,341,102	$1,379,744	$1,413,269	$1,447,486	$1,482,365	$1,518,006	$1,554,381	$1,593,386	$1,633,207	$1,673,862
Feeder System non new bus fares	$0	$0	$0	$0	$0	$0	$0	$0	$0	($471,545)	($481,897)	($492,453)	($506,642)	($518,952)	($531,517)	($544,324)	($557,412)	($570,769)	($585,091)	($599,714)	($614,642)
Advertising		$0	$0	$0	$0	$0	$0	$0	$0	$134,070	$138,066	$142,180	$146,417	$150,780	$155,274	$159,901	$164,666	$169,573	$174,626	$179,830	$203,708
FTA Contribution																					
Capital		$0	$0	$0	$0	$0	$0	$16,712,698	$17,210,737	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,945,648	$0
O & M Subsidy		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Local Gov. Contrib.		$6,978,011	$7,185,956	$7,400,098	$7,620,820	$7,847,715	$8,081,577	$8,322,408	$8,570,416	$8,825,814	$9,088,823	$9,359,670	$9,638,588	$9,925,818	$10,221,608	$10,526,212	$10,839,893	$11,162,921	$11,495,577	$11,838,145	$12,190,921
Interest Earned		$0	$418,681	$727,025	$1,056,393	$1,407,884	$1,782,650	$1,761,593	$2,042,005	$2,185,399	$1,934,825	$1,950,367	$1,964,918	$1,979,784	$1,993,553	$2,006,402	$2,018,213	$2,028,873	$2,020,782	$1,907,847	$1,881,527
Bond Sales		$0	$0	$0	$0	$0	$0	$15,000,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total		$6,978,011	$7,604,637	$8,127,123	$8,677,013	$9,255,599	$9,864,226	$41,796,699	$27,823,157	$14,412,290	$14,500,442	$14,864,080	$15,260,093	$15,651,841	$16,052,943	$16,463,758	$16,884,690	$17,315,826	$17,744,673	$20,026,468	$18,534,584
Uses of Cash																					
System O & M Expense		$0	$0	$0	$0	$0	$0	$0	$0	$7,108,938	$7,320,785	$7,538,944	$7,763,605	$7,994,960	$8,233,210	$8,478,559	$8,731,221	$8,991,411	$9,259,355	$9,535,284	$10,801,379
Feeder O & M Expense		$0	$0	$0	$0	$0	$0	$0	$0	$5,512,780	$5,677,061	$5,846,238	$6,020,456	$6,199,865	$6,384,621	$6,574,883	$6,770,814	$6,972,585	$7,180,368	$7,394,343	$8,702,507
Capital Costs																					
BRT and Feeders		$0	$0	$0	$0	$0	$0	$31,844,392	$32,793,355	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,259,197	$0
BRT rebuilding		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,632,098	$0
Add'l BRT Yard Expansion		$0	$0	$0	$0	$0	$0	$1,581,005	$1,628,118	$0	$0	$0	$0	$0	$0	$0	$0	$0	$873,524	$0	$0
Feeder rebuilding		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,259,377	$0
Cost of Selling Bonds		$0	$0	$0	$0	$0	$0	$1,500,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt Service		$0	$0	$0	$0	$0	$0	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734
Total		$0	$0	$0	$0	$0	$0	$36,015,130	$35,511,207	$13,711,452	$14,087,580	$14,474,915	$14,873,794	$15,284,559	$15,707,565	$16,143,176	$16,591,769	$17,053,729	$18,402,980	$23,170,032	$20,593,620
Fund Balance																					
Starting		$0	$6,978,011	$14,582,648	$22,709,771	$31,386,784	$40,642,382	$50,506,609	$56,288,178	$48,600,128	$49,300,966	$49,713,828	$50,102,993	$50,489,292	$50,856,574	$51,201,953	$51,522,535	$51,815,457	$52,077,553	$51,419,246	$48,275,682
Change for Year		$6,978,011	$7,604,637	$8,127,123	$8,677,013	$9,255,599	$9,864,226	$5,781,569	($7,688,050)	$700,837	$412,862	$389,164	$386,300	$367,282	$345,378	$320,582	$292,922	$262,097	($658,307)	($3,143,564)	($2,059,036)
Ending		$6,978,011	$14,582,648	$22,709,771	$31,386,784	$40,642,382	$50,506,609	$56,288,178	$48,600,128	$49,300,966	$49,713,828	$50,102,993	$50,489,292	$50,856,574	$51,201,953	$51,522,535	$51,815,457	$52,077,553	$51,419,246	$48,275,682	$46,216,646

Crystal City - Potomac Yard
Transit Corridor Alternatives Analysis

Financing Strategy

Cash Flow -- BRT Eads Street Alternative

Assumptions

Ridership
- Daily Riders in 2025
  - System 36,074
  - Annual/Daily Riders 250

2025 Passenger Revenues (2002 dollars)
- System $7,838,435
- Feeder Bus $1,327,168

Advertising on Buses
- Ad Income $14,423,500
- Number of buses 1,443
- $ per year per bus $9,995

- BRT bus w/o spare 2025 10
- Feeder Buses 2025 7

Capacity
- capacity of BRT veh. 220
- capacity of feeder bus 80
- max BRT load point 2025 2200
- max. feeder riders/hr '25 560

Local Gov. Contribution $6,580,000

2025 Op. & Maint. Expenses (2002 Dollars)
- System $5,300,000
- Feeder Bus $4,110,000

Maintenance Expansion
- Per BRT Vehicle $250,000

Inflation Rate
- Revenue 1.49%
- Everything else 2.98%

Bond Issue
- Amount $15,000,000

- Selling Expense (%) 10.00%
- Interest Rate Paid 6.00%

Interest Earned on Fund 4%

Capital Costs (2002 Dollars)
- BRT system w/ feeders $50,354,682

Crystal City/Potomac Yard Corridor Transit Alternatives Analysis

Cash Flow - BRT Eads Street Alternative - years 2024 to 2032

percent change pop	1.19%	1.18%	1.17%	1.16%	1.15%	1.14%	1.13%	1.12%	1.11%
percent change emp	0.87%	0.86%	0.85%	0.84%	0.83%	0.82%	0.81%	0.80%	0.79%
Year	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
Population									
of Study Area (MWCOG)	79,176	**80,108**	81,043	81,981	82,921	83,864	84,809	85,757	86,706
SA Employment (COG)	163,724	**165,136**	166,544	167,947	169,345	170,737	172,125	173,506	174,881
of Potomac Yard (COG)	7,383	**7,543**	7,631	7,719	7,808	7,897	7,986	8,075	8,164
PY Employment (COG)	13,017	**13,534**	13,649	13,764	13,879	13,993	14,107	14,220	14,333
Daily Ridership	35,730	**36,074**	36,419	36,763	37,107	37,451	37,794	38,137	38,478
	0.97%	**0.96%**	**0.96%**	**0.94%**	**0.94%**	**0.93%**	**0.92%**	**0.91%**	**0.89%**
Annual Ridership									
Bus Rapid Transit		**12.93%**							
BRT System	8,932,500	**9,018,500**	9,104,750	9,190,750	9,276,750	9,362,750	9,448,500	9,534,250	9,619,500
Maximum Load Point	1,874	**1,892**	1,910	1,928	1,946	1,964	1,982	2,000	2,018
Number of displaced users	6,208,088	**6,267,858**	6,327,801	6,387,571	6,447,341	6,507,111	6,566,708	6,626,304	6,685,553
Feeder Buses									
Feeder Bus Baseline	0	**0**	0	0	0	0	0	0	0
Feeder Bus w/BRT Syst	1,982,281	**2,001,366**	2,020,506	2,039,591	2,058,676	2,077,761	2,096,790	2,115,820	2,134,738
Net new feederbus riders	1,982,281	**2,001,366**	2,020,506	2,039,591	2,058,676	2,077,761	2,096,790	2,115,820	2,134,738
Displaced riders	1,213,156	**1,224,836**	1,236,550	1,248,230	1,259,910	1,271,590	1,283,236	1,294,882	1,306,460
Future Procurement									
Load factor of BRT	0.77	**0.78**	0.79	0.80	0.74	0.74	0.75	0.76	0.76
BRT vehicles required	11	**11**	11	11	12	12	12	12	12
Feeders required	8	**8**	8	8	8	8	8	8	9
BRT overhaul/replace?	no	**no**	no	no	replace	no	no	no	no
Feeder overhaul/replace?	no	**no**	no	no	replace	no	no	no	no
Amounts in 2002 Dollars									
BRT System Fares	$7,763,688	**$7,838,435**	$7,913,399	$7,988,146	$8,062,893	$8,137,640	$8,212,170	$8,286,699	$8,360,794
BRT non new transit fares	($5,395,763)	**($5,447,712)**	($5,499,812)	($5,551,762)	($5,603,711)	($5,655,660)	($5,707,458)	($5,759,256)	($5,810,752)
Feeder Fares	$1,238,926	**$1,250,854**	$1,262,816	$1,274,744	$1,286,673	$1,298,601	$1,310,494	$1,322,387	$1,334,211
Feeder System non new bus fares	($454,933)	**($459,313)**	($463,706)	($468,086)	($472,466)	($476,846)	($481,213)	($485,581)	($489,922)
Advertising	$109,950	**$109,950**	$109,950	$109,950	$119,946	$119,946	$119,946	$119,946	$119,946
Local Gov. Contrib.	$6,580,000	**$6,580,000**	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000
BRT O & M Expense	$5,830,000	**$5,830,000**	$5,830,000	$5,830,000	$6,360,000	$6,360,000	$6,360,000	$6,360,000	$6,360,000
Feeder O & M Expense	$4,697,143	**$4,697,143**	$4,697,143	$4,697,143	$4,697,143	$4,697,143	$4,697,143	$4,697,143	$5,284,286
BRT overhaul	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Feeder Overhaul	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Add'l BRT Procurement	$0	**$0**	$0	$0	$4,398,900	$0	$0	$0	$0
BRT Yard Expansion	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Add'l Feeder Procure.	$0	**$0**	$0	$0	$2,100,000	$0	$0	$0	$300,000
Sources of Cash									
BRT System Fares	$10,749,286	**$11,014,484**	$11,285,508	$11,561,849	$11,843,920	$12,131,829	$12,425,360	$12,724,945	$13,030,021
BRT non new transit fares	($7,470,754)	**($7,655,067)**	($7,843,428)	($8,035,485)	($8,231,524)	($8,431,621)	($8,635,625)	($8,843,837)	($9,055,865)
Feeder Fares	$1,715,366	**$1,757,686**	$1,800,936	$1,845,034	$1,890,047	$1,935,991	$1,982,833	$2,030,640	$2,079,324
Feeder System non new bus fares	($629,882)	**($645,422)**	($661,304)	($677,497)	($694,025)	($710,896)	($728,096)	($745,651)	($763,528)
Advertising	$209,778	**$216,030**	$222,467	$229,097	$257,372	$265,041	$272,940	$281,073	$289,449
FTA Contribution									
Capital	$0	**$0**	$0	$0	$6,972,442	$0	$0	$0	$361,974
O & M Subsidy	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Local Gov. Contrib.	$12,554,211	**$12,928,326**	$13,313,590	$13,710,335	$14,118,903	$14,539,647	$14,972,928	$15,419,122	$15,878,611
Interest Earned	$1,758,230	**$1,664,214**	$1,561,923	$1,450,861	$1,028,845	$981,107	$645,550	$429,177	$154,244
Bond Sales	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Total	$18,886,235	**$19,280,252**	$19,679,693	$20,084,195	$27,185,980	$20,711,098	$20,935,889	$21,295,469	$21,974,232
Uses of Cash									
System O & M Expense	$11,123,260	**$11,454,733**	$11,796,084	$12,147,607	$13,646,843	$14,053,519	$14,472,314	$14,903,589	$15,347,716
Feeder O & M Expense	$8,961,842	**$9,228,905**	$9,503,926	$9,787,144	$10,078,800	$10,379,149	$10,688,447	$11,006,963	$12,751,842
Capital Costs									
BRT and Feeders	$0	**$0**	$0	$0	$13,944,885	$0	$0	$0	$723,949
BRT rebuilding	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Add'l BRT Yard Expansion	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Feeder rebuilding	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Cost of Selling Bonds	$0	**$0**	$0	$0	$0	$0	$0	$0	$0
Debt Service	$1,089,734	**$1,089,734**	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734	$1,089,734
Total	$21,174,836	**$21,773,372**	$22,389,744	$23,024,484	$38,760,262	$25,522,401	$26,250,495	$27,000,285	$29,913,240
Fund Balance									
Starting	$46,216,646	**$43,928,045**	$41,434,926	$38,724,875	$35,784,585	$24,210,303	$19,399,000	$14,084,395	$8,379,578
Change for Year	($2,288,600)	**($2,493,120)**	($2,710,051)	($2,940,290)	($11,574,282)	($4,811,303)	($5,314,605)	($5,704,816)	($7,939,008)
Ending	$43,928,045	**$41,434,926**	$38,724,875	$35,784,585	$24,210,303	$19,399,000	$14,084,395	$8,379,578	$440,570

APPENDIX E – ENVIRONMENTAL EVALUATION

The Study Team conducted a review of environmental issues associated with the introduction of the transit alternatives into the Crystal City/Potomac Yard Corridor. While not intended as a detailed environmental assessment, this review identifies environmental features and issues that may be of consequence and should be considered as this project is advanced through planning and design. This environmental review also makes note of environmental features for which permitting, consultation, or other tasks may require additional time and should be planned for in the project's schedule. The Team examined the cultural and historical resources, wetlands, and noise impacts located near the proposed transit alignment.

E.1 BRT ALTERNATIVES

The environmental sub-consultant analyzed whether constructing and operating new transit in the proposed BRT corridor would have the potential to impact either the natural or social environment. Based upon the readily available published information the environmental study team used to conduct the analysis, the environmental study team determined that no forests, 100-year floodplains, or parklands lie within the proposed BRT corridor. The environmental study team determined that the BRT transit corridor would pass near cultural/historic resources, wetlands, and residences, as discussed in the following sections.

E.1.a. Cultural and Historic Resources

The proposed BRT/LRT corridor would follow one historic railroad feature in the southern portion of the project area, the Richmond, Fredericksburg & Potomac Railroad for a distance over 3,500 feet. In addition, one station along the Route 1 corridor abuts the eastern boundary of the Potomac Historic District. Future studies should include coordination with the State Historic Preservation Office to develop strategies that protect these resources.

E.1.b. Wetlands

Based on data published in the National Wetlands Inventory (NWI), the environmental study team determined that the proposed BRT/LRT transit corridor would not pass through NWI wetland areas. Field verification/delineation would be required during detailed engineering

studies to positively identify wetlands and their boundaries and gives the technical foundation for avoiding or minimizing impacts to wetlands.

E.1.c. Noise

The environmental study team used the FTA definitions of noise-sensitive land uses to identify potentially noise-sensitive areas along the BRT corridor. The team determined that two major categories of noise-sensitive land uses, residential and park, are present in the study area. Residences include:

- Existing detached and attached single-family units;
- Existing mid- and high-rise multiple-family units; and
- Planned single-and multi-family residences within the Potomac Yard Mixed Use Development Area.

To indicate the scope of potential noise effects associated with each alternative, the environmental study team measured the length of the corridor that would pass near or through these noise-sensitive land use areas. The BRT corridor would not pass through any existing parks but would pass through noise-sensitive residential areas as follows:

- Approximately 2.6 miles of the proposed BRT corridor would pass through existing and planned high density mixed use development, including noise-sensitive residential uses, in the Crystal City and Potomac Yard areas in Arlington.

- Approximately 1.7 miles of the proposed BRT corridor would pass through planned mixed use Potomac Yard redevelopment in the City of Alexandria.

- Approximately 0.35 miles of the proposed BRT corridor would pass through commercial/residential mixed use areas and medium-to- high-density residential use areas in North Old Town, Alexandria.

Based on the generalized approach it developed for the initial set of alternatives, the environmental study team determined that the potential for a significant increase in study area noise levels is low. The result is due to the existing noisy, urban environment and the fact that the new bus system would operate on streets that incorporate state-of-the art noise reduction features. Future analysis during the next stage of the environmental screening should focus on specifically identifying each noise-sensitive receptor and undertaking a full analysis based on the methods presented in FTA's *Transit Noise and Vibration Impact* manual.

E.2. LRT ALTERNATIVES

The proposed LRT transit corridor would be in the same location as the BRT corridor, with the facility constructed and operated within the street system. The environmental study team analyzed the potential for environmental impacts associated with LRT construction and operation, and determined that they would be similar to the effects of the BRT system, with one minor exception being the issue of noise.

As discussed in Section 3, the environmental study team developed a generalized approach for identifying the noise impacts associated with LRT and determined that while noise levels might increase, the potential for significant noise impacts would be low. This is because of the study area's existing noisy, urban environment and because the new transit system would incorporate state-of-the art noise reduction features. Nevertheless, more detailed studies of BRT and LRT would fully identify the nature and extent of noise increases using the FTA approach presented in its *Transit Noise and Vibration Impact* manual.

E.3. METRORAIL STATION ALTERNATIVE

The environmental study team analyzed whether constructing and operating two new stations located along the existing Metrorail line would raise environmental concerns. Based upon published information that the environmental study team used to conduct the analysis, it was determined that no forests, 100-year floodplains, wetlands, or known historic resources lie within the proposed station areas.

Based on available property information, the existing rail line is located within NPS property in the area of the northernmost station. Should it be determined that a station in this location would best meet the project purpose and need, a Section 4(f) analysis would be required. Future studies for a station at this location should begin with definitive analysis of property boundaries and early coordination with NPS to ensure that the procedures of Section 4(f), which are designed to protect parklands, are followed.

In the vicinity of the station that would serve Potomac Yards, the existing Metrorail line currently passes near NWI identified wetlands, which could pose constraints on the new station configuration and the layout of access and support facilities (e.g., walkways, kiss-and-ride lots, or bus platforms). Future studies should include early wetland delineations to identify these constraints, should this alternative be chosen.

E.4. LRT MAINTENANCE FACILITIES

The environmental study team also analyzed the potential for environmental concerns associated with the LRT maintenance facility sites considered in the transportation analysis. Based on analysis of readily available, published information, the environmental study team identified several proposed locations that would present environmental concerns involving potentially significant wetland and/or park issues. Table 7-1 on page 7-16 lists all the potential maintenance facilities, noting the ones with environmental concerns.

APPENDIX E – Environmental Evaluation

APPENDIX F – Operational Characteristics

F. OPERATIONAL CHARACTERISTICS

This appendix summarizes the operational characteristics of the modal alternatives.

F.1 BRT ALTERNATIVES

The proposed BRT operation would run during the same time period as the Metrorail system: 5:30 A.M. to midnight on weekdays; 8 A.M. to 2 A.M. on Saturdays; and 8 A.M. to midnight on Sundays. The locally preferred alternative consists of state-of-the-art buses running on six-minute headways along the Route 1 Corridor.

Twenty stops, located along the length of the route, would offer shelter for waiting passengers. Passengers would pay their fares in the station and then board when the bus arrives.

Feeder bus service would bring passengers from those areas beyond walking distance of the BRT line to the stations. The service would be comprised of the current bus operations and additional service so that the entire study area would be interlaced with routes within one-quarter mile of every point in the study area. A reordering and rationalization of all bus service, within and passing through the area, would be appropriate to permit the most cost-effective service.

Signal priority equipment on the transit buses would permit them to move more rapidly through the corridor. With this equipment, BRT vehicles would automatically signal to traffic signals, delaying a change to a red signal and thereby extending the green. Analysis conducted in this study showed that the installation and use of priority signal equipment would improve transit speeds through the corridor and also reduce the delay for general traffic on U.S. Route 1. Conversely, traffic on the intersecting streets, and particularly those in Crystal City, may experience increased delay over today's conditions. However, the signals would be carefully set to prevent excessive delays to the cross street traffic.

The Eads Street alignment was selected as the preferred alternative because it offered better performance, in terms of the project's evaluation criteria, than the Clark Street alignment. However, the Clark Street alternative would also be considered in subsequent environmental and preliminary design studies.

F.2 LRT ALTERNATIVE

The operational characteristics of the LRT alternative are similar to those of the BRT alternative. The proposed LRT operation would also run during the same time period as the Metrorail system. The locally preferred alternative consists of state-of-the-art buses running on six-minute headways along the Route 1 Corridor.

Depending on the station type, the amenities of each station would include ticket vending machines, shelter, benches, and message boards. Passengers would arrive at one of the twenty stations, pay their fares in advance, and then board when the light rail arrives.

Feeder bus service would bring passengers from those areas beyond walking distance of the LRT line to the stations. The service would be comprised of the current bus operations and additional service so that the entire study area would be interlaced with routes within one-quarter mile of every point in the study area. Since the LRT and BRT alternatives occupy the same transitway and stations, the feeder bus network for both alternatives would be identical.

Similar to the BRT alternative, signal priority equipment also would be used in the LRT alternative permitting rapid movement of light rail vehicles. With this equipment, LRT vehicles would automatically signal to traffic signals, delaying a change to a red signal and thereby extending the green. Analysis conducted in this study showed that the installation and use of priority signal equipment would improve transit speeds through the corridor and also reduce the delay for general traffic on U.S. Route 1. Conversely, traffic on the intersecting streets, and particularly those in Crystal City, may experience increased delay over today's conditions. However, the signals would be carefully set to prevent excessive delays to the cross street traffic.

F.3 METRORAIL ALTERNATIVE

Metrorail currently operates from 5:30 A.M. to midnight on weekdays except Friday; 8 A.M. to 2 A.M. on Fridays and Saturdays; and 8 A.M. to midnight on Sundays. Some minor scheduling changes on the Blue and Yellow lines would take place to incorporate the Potomac Yard Metrorail station.

The Metrorail station would have the same features as all other stations in the current system. Passengers would be able to purchase a farecard at the station and make use of the information displays to find their way to their destinations. Because Metrorail is a familiar mode, current Metrorail

passengers would have little to no difficulty maneuvering through the station.

Feeder bus service would bring passengers from those areas beyond walking distance of the Metrorail station. The service would be comprised of the current bus operations and additional service so that the entire study area would be interlaced with routes within one-quarter mile of every point in the study area. Bus service that currently services Potomac Yard would need to be rerouted so as to serve the Potomac Yard Metrorail station. A reordering and rationalization of all bus service, within and passing through the area, would be appropriate to permit the most cost-effective service.